

## Family HESPERIADÆ.

53. HASORA BADRA, Moore. Two males and a female taken, normal.
54. PADRAONA PALMARUM, Moore, var. KAYAPU. The black area beyond and below the cell of the forewing is nearly obsolete, the yellow band of the hindwing very wide. This is perhaps a distinct species, but as only one male was taken, I cannot be sure.
55. CHAPRA MATHIAS, Fab.
56. UDASPES FOLUS, Cram.
57. HIDARI IRAVA, Moore. One male.
58. TAGIADES ATTICUS, Fab. The two hyaline spots below the three subapical ones are absent in the male, the two at the end of the cell are joined in the female. The white area of the hindwing is very large in both sexes, extending to the outer margin, where there are three black spots.

## EXPLANATION OF PLATE I.

- Fig. 1. *Danais pietersii*, n. sp.  
 ,, 2. *Radena longa*, n. sp.  
 ,, 3. *Danais chrysea*, n. sp.  
 ,, 4. *Radena macra*, n. sp.  
 Figs. 5-8 refer to Mr. Doherty's other paper.

III.—*New and Rare Indian Lycaenidæ.*—By WILLIAM DOHERTY,  
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(With Plate I, Figs. 5-8.)

Family LYCÆNIDÆ.

Subfamily THECLINÆ.

1. ARHOPALA KHAMTI, n. sp. Pl. I, Fig. 5.

Near *A. aënea*, Hew., differing in the dark, dull indigo-blue of the upperside, and the darker shade of the underside, with the terminal cell-spot remote from that in the lower median space of the forewing; hindwing with a large subanal ocellus bordered with metallic green, which

extends to the lower median vein; a dark spot edged with whitish in the lower median space. Lobe and tail large.

Margherita, Upper Assam.

2. *FLOS AHAMUS*, n. sp. Pl. I, Fig. 6.

Female, like *Flos asoka*, but with the blue of the upperside pale, slightly vioscent outwardly, not reaching up to the upper radial vein. Below, forewing with the transverse fasciæ much duller, and more regular, those in the interno-median space of the forewing obscure. Hindwing with the pale basal stripe absent, the base all dark, touched with scarlet costally; the lower half of the wing very dark, especially subabdominally, the markings there obscured; beyond the dark base there is a broad lilac area transversely from the costa to the hind-margin, containing a sinuous irregular band from the costa to the median vein, continued by a small separate spot in the interno-median space; an obscure ocellus in the lower median space submarginally, no other metallic markings. The species also resembles the Himalayan form of *Flos fulgidus*, Hew., but obviously differs in the colour of the upperside; and on the underside in the whitish spot at the end of the cell of the forewing, which is narrow and conspicuous, (broad and dull in *fulgidus*); the lower part of the hindwing is much darker, and the pale costal band absent.

Margherita, Upper Assam.

3. *ACESINA ZEPHYRETTA*, n. sp.

Male, above dark brown, a small diffused light blue area occupying less than a sixth of the forewing, including part of the cell, the interno-median and the lower median space, extending just above the middle median vein, the veins dark; hindwing unmarked, the cilia whitish, especially apically. Below brown, slightly glossed with violet, except the spots, which are darker and encircled by broad whitish rings. There is no costal white spot on the hindwing, but the apex is chiefly whitish, the disc irrorated with whitish scales, the ocelli obsolescent.

This species, in which the male resembles a female, is obviously distinct, and seems to connect *A. paraganesa* with the other species of *Acesina*.

Margherita, Upper Assam.

4. *ACESINA ARIEL*, n. sp.

Male, above violet-blue (dull in some lights) over half of the hindwing, and rather more than half of the forewing, the blue areas rounded. Underside uniform brown, strongly glossed with violet, not irrorated with whitish scales, the markings annular, scarcely darker than the

ground-colour, with slender, pale violet-whitish rings; no costal white patch on the hindwing, the apex not whitish; three distinct subanal ocelli with metallic bluish-green irides. The violet hue of the upperside distinguishes it from *A. ammon* and *ammonides*, as well as the entire absence of the costal white patch on the hindwing below.

Margherita, Upper Assam.

5. *ACESINA AMMONIDES*, n. sp. (= *ammon*, mihi, nec Hewitson).

The Tenasserim form of *A. ammon*, which I have now been able to compare with a specimen from Pahang (Malay Peninsula) kindly lent me by Mr. de Nicéville, and one from Perak, taken by myself, seems a good local race, which I distinguish by the above name. In *A. ammon* the blue is slightly tinged with violet (but much less than in *A. ariel*), and occupies less than half of the forewing and hardly more than a quarter of the hindwing. In *ammonides*, the blue is more azure in tint, extends well beyond the cell all around it, and occupies half of the forewing and half of the hindwing. Below, in *ammon* there is only the conspicuous white costal mark on the hindwing. In *ammonides*, the apices of both wings, especially the hindwing, are strongly suffused with whitish, and there are whitish scales abdominally on the hindwing, and a quadrate discal white spot between the lower two median veins. In one specimen of *ammonides*, the three minute ocelli of the hindwing are touched with metallic gold; *ammon* is without metallic scales.

Tenasserim valley.

Besides those above mentioned, I took the following species of this subfamily at Margherita, Upper Assam. *Zephyrus distortus* (*Zinaspia distorta*, de Nicéville), *Flos moellerii*, *Darasana perimuta* and *paramuta*, *Arhopala teesta*, *singla*, *centaurus*, *amantes*, *rama*, *anarte*, *belphebe*, *bazalus* and *camdeo*.

Subfamily *APIINÆINÆ*.

6. *DRINA MANEIA*, Hew.

The veins of the forewing are marked with raised lines of light-brown scales in the blue area, somewhat as in *Papilio ganesa* or *Argynnis childrenii*. The veins so marked are the three medians, the lower radial and the submedian, besides a line in the interno-median space, and two terminally in the cell. These are presumably scent-glands.

The venation agrees well with that of *Drina donina*, the type of the genus; so that Mr. de Nicéville, who had never seen the species, showed some acuteness in placing it here, in spite of its wholly different appearance.

Rare at Padang Rengas, Perak.

Genus *THRIX*, novum.

Male, forewing with the subcostal vein five-parted (including the vein itself as a branch), the first branch originating one-third before the end of the cell, the third a little before the end, the second nearer the first than the third, the fourth from the third halfway to the apex, the fifth close to the apex, very short. Discocellular veins nearly straight, the lower half again as long as the upper, cell slightly longest at its lower angle, second bifurcation of the median vein a little before its end. Submedian vein exceedingly remote from the median, straight for nearly half of its length, then bent downwards like a bow. In the interno-median space discally, there is a deep oblique depression on the upperside, covered with short grey down, and bearing a conspicuous extensile tuft of long orange hairs produced downwards and outwards over the depression. Hindwing with the two lower median branches forking simultaneously from the end of the cell; a long tail from the submedian, a short one from the lower median vein.

The curious scent-organ in the middle of the forewing of the male, resembling that of *Dacalana* and *Arrhenothrix*, has so distorted the venation that I have thought it advisable to separate this genus from *Neocheritra*. Whether the male has five and the female four subcostal branches, as in that genus, I do not know.

7. *THRIX GAMA*, Distant, (*Neocheritra gama*).

Above black, a tuft of orange hairs over a small grey cavity in the middle of the forewing. Hindwing with the lower part white, containing two black spots; above this grey, with three black spots on the boundary between the grey and the white; the upper part of the wing black. Below as in the female. The species apparently mimics *Eoöxylides tharis*.

Rare at Padang Rengas, Malay Peninsula. I have also taken it in the mountains of south-western Sumatra.

Subfamily *PORITINÆ*.

Genus *MASSAGA*, mihi. I find that in the male of *M. pediada*, the type of this genus, there is a narrow tuft of prostrate black hairs arising at the end of the cell, extending beyond it along the upper border of the upper median vein. This was pointed out to me in *M. pharyge* by Mr. de Nicéville and I afterwards found it in *M. pediada*. In *M. potina* it is apparently present, but very small and inconspicuous. In all these species the upper tuft is of considerable size, yellowish or whitish, turned upwards along the upper subcostal vein, in a large whitish patch. In

*Poritia*, the lower tuft is absent, the upper one black or dark brown, without the whitish patch.

Subfamily *LYCÆNINÆ.*

Genus *PHENGARIS*, *NOVUM.* The splendid Chinese butterfly *Lycæna atroguttata*, Oberthür, deserves to be placed in a separate genus or subgenus, distinguished from *Lycæna* by the upper discocellular vein of the hindwing being short and angled outwardly, the lower discocellular meeting the median vein opposite its second forking.

This butterfly is certainly the finest of the subfamily, unless the *dani's* group of *Cyaniris* be excepted. I was not able to detect any odour about it, but it has all the air of a protected species. I often saw it in the meadows of the Kutchu Naga country, Naga Hills, from 6000 to 8000 feet elevation, flying very slowly and visible from a great distance, so that I caught a good number, in spite of its rarity. The character of its markings, round black spots on a pure white ground, is very remarkable. It is hard to avoid thinking *Tajuria maculata*, Hew. a mimic of this species, though it seems to live at a lower elevation, and further to the westward. *Taraku hamada* is somewhat similarly marked, and is obviously protected.

I have taken the name *Phengaris*, which means a daughter of the moon, from the modern Greek.

Subfamily *GERYDINÆ.*

8. *GERYDUS HERACLEION*, n. sp.

Male, forewing less acute than in *G. symethus*, hindwing rounded. *Above*, brown, forewing with a slaty gloss, the apex darker, a broad oblique white band from the upper end of the cell and beyond it (above the cell it is obscure), almost to the middle of the interno-median space, the outer part doloseent along the lower median vein, projecting furthest in the lower median space (unlike *symethus*). The band is much broader than in *Gerydus biggsii*, Distant, (*gopara*, de Nicéville). Hindwing all dark. *Below*, the white band of the forewing is obscure and broken, the spot in the lower median space quite separate from and more distinct than the rest, the transverse lunular band obsolescent in the forewing, three costal ring-spots, three small subapical lunules. Hindwing, much less clouded with blackish than in *G. croton*, the lunular transverse band nearly regular, the basal spots quadrate, the submarginal black dots very distinct.

Perak, Malay Peninsula.

The species is larger than *G. symethus*, not quite so large as *G. ancon*. The upper median vein of the male is naked above and swollen from the end of the cell one-fourth towards the outer margin. This may be regarded as a generic character of *Gerydus*, since it occurs at any rate in *G. symethus*, *biggsii*, *boisduvalii*, *heracleion*, *irroratus* var. *assamensis*, and *ancon*. In *G. croton* the swelling is indistinct, and the vein is covered with black scales.

9. *GERYDUS IRRORATUS*, Druce, var. *ASSAMENSIS*, nov. Pl. I. Fig. 7.

Above, unmarked except by a small, pale, longitudinal area around the base of the upper median vein on the forewing. Below, pale grey-brown, without the dark markings of *G. boisduvalii*, a small pale area on the forewing below the middle median vein, the markings lunular, those in the cell of the forewing reduced, the transverse discal band of the forewing subapical, extending only to the upper median vein, a single conspicuous dark lunule near the lower angle; the transverse band of the hindwing regular, an undulated, continuous submarginal dark line.

Dhansiri Valley, Naga Hills.

It resembles *G. melanion* from the Philippines, but is without the white area near the lower angle of the forewing above. It may be conspecific with Mr. Druce's *G. irroratus* (from Siam) which has never been figured or properly described.

I have taken what may be the female of *Gerydus irroratus* in Perak. Some pale markings represent the broken white band of *G. boisduvalii*, the hindwing is angled at the upper median vein.

The figure represents the transverse band of the hindwing incorrectly; it is really composed of separate annular lunules.

10. *LOGANIA MASSALIA*, n. sp., Pl. I, Fig. 8.

Female. Above black, a round, dull white discal area on the forewing from just above the upper median vein almost to the submedian vein. Below irregularly speckled and variegated; forewing with the costal and apical parts ochreous-brown, the rest blackish. Hindwing also tinged with ochreous, a submarginal dark area, and obscure dark transverse bands. Hindwing not angled, the margin entire.

Nearest an undescribed *Logania* from Perak, Malay Peninsula, which, however, has the upperside marked as in *L. marmorata*, and the margin undulated,

Margherita, Upper Assam.

## EXPLANATION OF PLATE I.

- Fig. 5. *Arhopala khamti*, n. sp. (Assam.)  
 Fig. 6. *Flos ahamus*, n. sp. (Assam.)  
 Fig. 7. *Gerydus irroratus*, Druce, var. *assamensis*, var. nov. (Assam.)  
 Fig. 8. *Logania massalia*, n. sp. (Assam.)  
 Figs. 1—5 refer to the previous paper on the Butterflies of Engano.



IV.—*Materials for a Flora of the Malayan Peninsula*.—By GEORGE KING,  
 M. B., LL. D., F. R. S., C. I. E., *Superintendent of the Royal  
 Botanic Garden, Calcutta*. No. 3.

(Continued from page 206 of Vol. LIX of 1890.)

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In the arrangement of the Natural families which is being followed in these papers (that of DeCandolle as modified by the late Mr. Bentham and Sir Joseph Hooker), the family *Dipterocarpeae* should have preceded *Malvaceae*. Delays have, however, occurred in the elaboration of that family; and, rather than postpone the publication of the remaining three *Thalamifloral* orders, I have decided to submit my account of these to the Society now, deferring my paper on the *Dipterocarpeae* and on the previously omitted *Anonaceae* to a future occasion.

## ORDER XVII. MALVACEÆ.

Herbs, shrubs or trees; herbaceous portions often stellate-hairy or scaly. *Leaves* alternate, palminerved, simple, lobed, or rarely compound. *Stipules* free, sometimes caducous. *Bracteoles* 3 or more, free or combined, often forming an epicalyx. *Flowers* axillary or terminal, solitary, fascicled or cymose-paniculate, regular, hermaphrodite or 1-sexual. *Sepals* 5, valvate, free or connate. *Petals* 5, twisted-imbricate. *Stamens*  $\infty$ , rarely definite, adnate to the base of the petals; filaments monadelphous, forming a tube; anthers oblong or reniform, cells sinuous or twisted, linear or annular, ultimately 1-celled bursting longitudinally. *Ovary* 2-many-celled, entire, or lobed, of 2-5 or usually more carpels whorled round a central axis; styles connate below or throughout their length; ovules 1 or more, curved, attached to the inner angle of each carpel. *Fruit* of dry cocci, or capsular and loculicidal, often large and woody. *Seeds* reniform or obovoid, sometimes arillate; albumen scanty, often mucilaginous or 0; embryo curved; cotyledons leafy, usually